

**IMPROVED SOFT-DECISION METRIC GENERATION
FOR HIGHER ORDER MODULATION**

ABSTRACT OF THE DISCLOSURE

5 A method (100) for simplifying soft-decision metric decisions in a M-ary
modulation system includes determining (102) a single function for a soft-decision metric
for each bit in a symbol by restricting the set of all possible Gray-coded constellation
points to those closest to a boundary between a bit value of 0 and 1 for each bit in the
input symbol and applying a predetermined function corresponding to the range of
10 restricted constellation points to the entire possible range of symbols. A next step
includes inputting (104) a symbol having real part, x , and an imaginary part, y . A next
step includes (106) setting a soft-decision metric for each bit in the symbol using the
predetermined function from the determining step (102).